OPERATIVE TREATMENT OF CANCER OF THE MALE GENITALS.

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Cancer of the Penis.

ONE case of cancer of the penis will be found in about 100 cases of cancer. The disease makes its appearance usually after middle life, appearing in men between forty-five and seventy years of age. It attacks at first the inner surface of the prepuce or glans penis, more commonly the latter. It begins as a small vesicle or nodule, which soon breaks down, leaving an ulcer with densely hard base and edges. The urine and other secretions irritate the ulcer, and its spread is rapid. The tunica albuginea offers some resistance, but after a comparatively short period this barrier is overcome, and the disease spreads to the body of the penis, and extends to the lymphatics and glands of the groin. Secondary deposit is first shown in the glands about the saphenous opening. Involvement of the glands is probably more common than usually believed. Kaufman found it to exist in forty cases out of forty-eight. The same writer gives the average duration of life in cases not operated on as twenty-two months. As soon as a diagnosis is made of the disease, which is usually epithelioma, radical measures should be advised. Syphilis is the only disease with which it may be confounded. The appearance of the ulcer covered with dead epithelium and very hard base, the induration extending some distance around, but intense, and with its limit ill-defined, will generally tell the character of the malady; if not, the microscope will decide the question. If phimosis exists, as it often does, and in my experience often produces the cancer, the prepuce should be split, that complete inspection of the disease may be had.

Both patient and surgeon are often to blame for delay in such cases; both hope that the ulcer may be syphilitic, and so treat it. Prognosis in early operation is good; after some delay, especially if iodide of potash and mercury are used constitutionally, prognosis is bad; after still further delay, and glandular infection has appeared, it is almost, if not quite, hopeless. In the early stage complete excision of the ulcer and its hardened base is often sufficient. The excision should go well outside of the indurated base, not leaving an atom of it. Recurrence of the disease may truly often be charged to incomplete operations. If the location is such as to make the use of the knife difficult, caustic should be used. Here, too, it is better to take away too much than too little. If the cancer has extended too far for simple excision, as is usually the case before the surgeon sees it, then amputation of the organ should be performed.

Amputation of the free portion of the penis is commonly done by a circular sweep of the knife, severing the member above the point of disease; the urethra is then slit up and attached by sutures to the neighboring skin. The chief objection to this procedure is that the orifice of the urethra almost certainly contracts, the urine dribbles over the neighboring parts, and the cure by granulation is very slow and tedious.

Amputation of the free portion of the penis is better done in the following manner: The hair should be shaved, the parts cleansed with green soap and water, and bathed in a solution of bichloride of mercury 1 to 500. The surgeon should stand on the right side of the patient with his assistant opposite. A soft gum catheter or rubber band should be tied around the penis close to its root to control hæmorrhage. The knife should be carried through the skin at a point opposite the junction of the corpora cavernosa with the corpus spongiosum on one side, and brought up the side and over the dorsum of the penis to a corresponding point on the opposite side. This flap should be convex, the convexity looking towards the glans, and resembles on a small scale the anterior flap of an amputation of the leg or arm. Starting at one end of the anterior flap the knife should now be made to transfix the penis, passing between the corpora cavernosa and corpus spongiosum, and coming out at the opposite end of the anterior flap. The knife should now be carried between the corpora cavernosa and corpus spongiosum for three-quarters of an inch, and then downward and backward to form a posterior flap. This contains the urethra, which should be dissected out of the flap. The corpora cavernosa is now split vertically as far back as the point of transfixion, and then the bleeding points are found and tied with fine carbolized silk ligatures, with the ends cut close. At least four vessels will require ligatures, the two dorsal arteries, and the arteries of the corpora cavernosa; a small tenaculum will secure the last better than forceps. The rubber catheter to control the bleeding can now be removed, and any other bleeding points secured. A small opening is now made in the centre of the anterior skin flap, and the urethra is drawn into this opening, slit up, and stitched in place; at least four stitches of carbolized silk will be required to make it secure. The anterior and posterior flaps are now joined with sutures of silk or horse-hair.

By the method just described a covering of skin is secured for the end of the organ, and repair is more rapid than could possibly be effected by granulation, which is necessary in the old circular operations. For one or two days, and longer, if it creates no irritation of the bladder and urethra, a soft gum catheter is kept in the bladder to carry off the urine. To keep the catheter in place, the stump of the penis and scrotum are carried through a large soft gum ring pessary, which is fastened by tapes or narrow bandages carried around the hips and thighs; to this ring the catheter may be tied with two or more strands of silk. The stump is dressed with iodoform gauze, packed with cotton wool, and the whole kept in place with a long four-tailed bandage of gauze, passing under the perineum and around the hips. The free end of the catheter may be secured in a bottle to catch the urine, by boring a hole in the cork just large enough to admit the catheter. The bottle can lie by the patient's side or between his legs. If the catheter cannot be tolerated, remove it and have the parts when soiled with urine carefully washed with a solution of hydrate of chloral, three grains to the ounce of water, and endeavor to keep the urine acid,—acid urine is aseptic; if very acid it is antiseptic. Its acidity can be maintained frequently by the free use of lemonade.

It is important also to see that the new urethral orifice does not become too small by cicatricial contraction. In the four cases in which I have done this operation I have been compelled to show the patient how to keep this orifice open by the occasional insertion of a short graduated metal sound. The patient should also be instructed to return for inspection every two or three months for a year. If the cancer was epitheliomatous in nature, and taken before lymphatic infection, it is almost certainly curable. Carcinoma extends by the lymphatics, and sarcoma by the blood-vessels, and in case of carcinoma of the genitals the most careful and painstaking inspection of the neighboring lymphatic glands should be made,—if involved, they must also be removed. If the scrotum is involved alone, or along with the penis, the diseased part must be removed thoroughly and completely. The danger in the operation is that the surgeon in his anxiety to save some of the tissue leaves portions of it, if not then cancerous, already infected, and doomed to become so. I have removed for cancer nearly two-thirds of the whole scrotum with permanent cure.

Amputation of the penis is frequently performed with the galvanic cautery, or by the écraseur, and the urethra afterwards treated by the method suggested by Teale. This consists in slitting up the posterior surface of the canal for half an inch, and suturing its mucous surface to the skin. These methods are used by surgeons who dread the loss of too much blood. The truth is, both primary and secondary hæmorrhage have not unfrequently followed amputations after either of these plans. The burnt, or bruised, and crushed surface sloughs, and is slow to heal. Septic troubles are also more likely to ensue; in fact, neither of these procedures has anything to recommend them.

It has been urged that the operation for cancer of the penis just described is insufficient, and that in malignant disease of other organs, as the uterus, testicles, breast, etc., we are not content with any operation short of complete removal. In cancer of the uterus, that organ is entirely removed with its adnexa; in case of the testicles, we take away with that body as much of the spermatic cord as is within our reach, and with the breast, we remove the pectoral fascia and axillary glands. But the cases are not always alike; the form of cancer of the penis is usually epithelioma, that of the other organs just mentioned usually scirrhous or medullary in character, and there is abundant clinical evidence to show that early and complete removal of epithelioma permanently cures. But if the nature of the cancer is scirrhous or medullary, or a long-standing and neglected epithelioma extending as far back as the scrotum, then a more radical operation is called for.

The plan given by Mr. Pearce Gould is probably the best. The operation is complete, and not difficult or very dangerous to execute. After being shaved and cleansed in the usual way, chloroform is given, and the patient placed in the lithotomy position, a large sound is introduced into the urethra, and held in position by an assistant; the surgeon stands between the patient's legs. The scrotum is split along the whole length of the raphé, care being taken not to enter either tunica vaginalis. The dissection is carefully continued, chiefly with the finger and handle of the knife, until the corpus spongiosum is exposed to the scrotal perineal junction, and the incision is then continued backward to the centre of the perineum. The corpus spongiosum is now carefully dissected out, and the sound being withdrawn, it is cut off, being careful to leave it sufficiently long to bring the end out in the perineum; the deep end of the urethra is now cut away from the penis, back to the triangular ligament. Two lateral skin flaps are now made at the base of the penis, and the suspensory ligament divided; at this juncture the dorsal arteries may be caught up and tied. Then with a periosteal elevator the crura are detached from the pubic arch. The crura are firmly fastened, and require some force to detach them. Two additional arteries (those of the cavernosa) and probably other smaller ones will require ligatures. The corpus spongiosum is now brought out at the posterior extremity of the scrotal and perineal wound; the urethra slit up for half an inch, and fastened by sutures to the skin. A small drainage-tube is introduced, and the whole incision closed by sutures. It is not necessary to keep a catheter in the urethra; the compressor urethra not being involved, the patient has full control over the bladder. The inguinal glands, if involved, should be removed. Mr. Wheelhouse suggests that it will add to the patient's comfort to remove both testes.

Medullary cancer of the penis is occasionally, but very rarely, seen. It occurs most frequently in boys, and its origin may be spontaneous, or the result of injury. When once started it spreads rapidly, soon involving the lymphatics and glands. If seen very early, amputation may be resorted to, but the recurrence is almost certain, no matter how early and complete the operation is done.

CANCER OF THE SCROTUM.

Cancer of the scrotum is so commonly found in persons whose bodies are constantly exposed to the irritating effects of soot, that it is often known as "chimney-sweep's cancer." The same form of cancer is found in operatives engaged in the manufacture of coal-tar and paraffin. It is supposed that one or the other of these irritants are allowed to remain for many days in the deep rugæ of the skin of the scrotum, and in consequence nodules or warts are first formed, and some time after in one of these bodies cancer occurs. These theories, however, are not universally accepted as true, and may be as unfounded as the one that ascribes cancer of the lip and tongue to the use of tobacco. The type of cancer of the scrotum is generally a large or polymorphous cell. Secondary infection is slow to appear; the spread of the disease is not rapid, but if left to itself may involve the whole scrotum, the testicles, and neighboring glands.

The operation must be a radical one. Remove with the knife all the diseased part; if one testicle is involved, it too must be sacrificed; if the glands in the groin are enlarged and indurated, they should be removed. If the disease returns, a second or even a third operation should be done.

CARCINOMA OF THE TESTICLE.

The medullary form of cancer is the one most commonly found in cancer of the testicle. Scirrhus is very rarely seen; a few authentic cases are, however, on record. Colloid and cysto-carcinoma are occasionally found. Cancer of the testicle generally occurs in persons between twenty and forty years of age. It is almost unknown in the very young, and is rarely seen after sixty. In one-quarter of the cases seen by Kocher, the disease followed contusions or other trauma. The average duration of the disease is about two years.

Jacobson gives the following points of diagnostic value:

(1) Continual progressing, solid enlargements without inflammation.

(2) Unequal consistence of the swelling at different parts.

(3) Absence of translucency.

(4) Tendency of scrotal veins to become enlarged, and scrotal tissues to become adherent.

(5) Increasing aches and painfulness.

(6) In doubtful cases, antiseptic tapping or exploratory incisions, preferably the latter.

(7) Enlargement of the cord and *a fortiori* that of the lumbar glands.

Operation; Castration.—The pubes and scrotum should be shaved and washed with green soap and water, and afterwards with a solution of bichloride of mercury, 1 to 500. This washing should be done some hours before, and again just before the operation is begun. The lower part of the abdomen, upper parts of the thighs and perineum should be included in this washing. The patient should be well purged the day before the operation or on the morning of that day. The inguinal region should be carefully examined for hernia. If the latter is present, it should be returned into the abdominal cavity, and before the operation for castration is completed a radical cure for hernia should be performed. The hernial sac should be dissected out, transfixed close to its neck with a silkworm gut, tied, and the ends left long. The sac should then be cut off close to the ligature. The ends of the ligature are then passed through the pillars of the ring and clamped with a perforated shot. There is thus left an imperishable ligature, which, if surgically clean, will give rise to no trouble, and a radical cure of the hernia results.

Mr. Treves wisely suggests that a large sponge be placed between the thighs and under the scrotum during the operation, to give some support to the testicles.

Everything being ready, the surgeon, standing on the right side of the patient, grasps with his left hand the skin of the scrotum and makes it tense. He then vertically incises the skin from one inch below the external abdominal ring to the lowest part of the scrotum. This wound may be larger than is required to remove the diseased testicle, but it is important for the after-drainage to carry the incision to the lowest point. If some portion of the skin is involved in the cancer, as is not unfrequently the case, instead of the vertical incision, two elliptical incisions should be made, meeting above and below, and including all the diseased skin and subjacent tissues. The incisions should be continued in depth until the tunica vaginalis is opened. The testicle can now be shelled out, partly by being pressed out by the fingers and thumb of the left hand still grasping the scrotum, and partly by being torn out by the fingers of the right hand, the knife being used only when the attachments are too strong to be separated by the fingers. The spermatic cord is now isolated and clamped with one or two strong artery forceps, which are intrusted to an assistant. The cord is then severed three-quarters of an inch below the clamps. The arteries and veins are now carefully caught and tied with fine, well-boiled, silk ligatures; at least three will be required, one each for the artery of the vas deferens, the spermatic, and the cremasteric, and as it will be impossible to tell the arteries from the veins, the open mouths of both from the pressure of the clamp being seen on the stump of the cord, several more ligatures will probably be needed. Before removing the artery forceps which have been used as clamps, secure the end of the stump with a good pair of catch forceps to prevent the end from slipping up into the inguinal canal, where it might begin again to bleed and be difficult to find. Any bleeding points in the scrotum should now be secured. The greatest possible care should be exercised to secure every bleeding point, as secondary hæmorrhage, owing to the laxity of the scrotal tissues, is very common after castration.

Another way of securing the cord, simple and less tedious in its execution, is to transfix the cord with an aneurismal needle, armed with a carbolized silk ligature. The loop of the ligature is cut, the needle withdrawn, and each half of the cord tied. The ends of the ligatures are cut short. As the nerves are included in the bite of the ligatures, more pain accompanies this method, and it is said it has been occasionally attended by tetanus. Neuralgia from injury of the nerve is believed also to have sometimes followed this plan of securing the cord, and suppuration is also not uncommon if a ligature of any size is left around it.

In closing the wound, a long slender straight needle may be used, armed with silkworm gut. Before the sutures are introduced, the assistant should stretch the wound by hooking a finger in each end and pulling its margins straight and taut. This will prevent the edges from being turned in, and enable the surgeon to accurately approximate the margins of the wound. Before tying the sutures, a small gum drainage-tube should be inserted and secured in place by the last stitch.

After-Treatment.—Iodoform is dusted over the wound, gauze placed on it, then a thick layer of cotton wool, and over this some protective, like soft sheet rubber, and the whole retained in place by a T bandage. In twenty-four hours the drainage-tube may be removed, and in six days the silkworm-gut sutures.

Results.—The danger to life in castration for cancer is very slight in these days of modern surgery. Permanent cures are uncertain. In many cases reported it is not known absolutely whether the disease was cancer or sarcoma. Curling reports four cases cured. In twelve cases, by Winiwarter, there was only one who did not have a return. Kocher reports six cases. In all the presence of cancer was verified by microscopic examination. These cases were alive and without return of the disease at periods varying from one to ten years. If the cure is not permanent, life at least is prolonged and the patient made more comfortable.

When the disease has progressed so far that secondary masses can be felt in the iliac fossa or lumbar region, and especially if cachexia is marked, the operation should not be performed, no matter how urgently the patient may demand it.

Cancer of the Prostate.

Cancer or carcinoma of the prostate is a comparatively rare disease, but probably of more frequent occurrence than statistics would indicate, owing to the fact that its early symptoms are somewhat similar to those of hypertrophy of the gland, and hence a correct diagnosis is not often made. The disease constitutes 85 per cent. of the malignant growths of the prostate, and occurs in men usually over fifty years of age.

From both a pathological and clinical stand-point, carcinoma of the prostate may be divided into two groups, the hard and the soft varieties.

The clinical course of the two varieties are very dissimilar; the hard or scirrhus type producing obstruction to the flow of urine, frequent desire to empty the bladder, great pain, amounting often to extreme agony, and the presence of blood, and fragments of broken-down tissue in the urine; while the soft encephaloid variety causes little or no vesical symptoms in the early stages, but is manifested by rectal pain, tenesmus, and difficulty in defecation.

In the scirrhous form of the disease, which is the more common, the prostate is enlarged by infiltration of its tissue with cancer-cells, and an examination per rectum will show it to be nodular, bossellated, and of a stony hardness. The normal curve of the urethra is altered, and an attempt to pass a steel instrument will be attended either by great difficulty or by absolute failure.

In the encephaloid form of the disease, the rarer variety, the growth at once penetrates the capsule of the gland, and extends directly backward to the rectum. There is usually no involvement of the bladder, nor obstruction to the passage of the urine, and the symptoms are those due to the projection of a soft ulcerating mass into the lumen of the bowel.

In both varieties there is involvement of the adjacent lymphatics, the formation of secondary deposits in other organs, and rapid emaciation, attended by the peculiar cachexia pathognomonic of malignant disease.

The diagnosis of carcinoma of the prostate is not easy, and can only be made by several observations of the patient. An examination of the urine affords little information. Severe pain, steady growth of the tumor, characteristic stony hardness of the scirrhous type, and the elastic semifluctuating feel in the encephaloid, coupled with hæmaturia or hæmorrhage from the rectum, and emaciation with cancerous cachexia are the symptoms upon which the nature of the trouble is suspected. A microscopical examination of a fragment of the tissue, if obtainable, will settle the question. The duration of the disease is short, averaging from a few months to one or two years. The result of the treatment of these growths in the past offers little encouragement, and usually all that can be done is to palliate the symptoms until death relieves the sufferer.

The symptoms which should induce the surgeon to suspect hard cancer of the prostate, and to distinguish it from prostatic hypertrophy may be briefly stated,—

(1) Frequency and difficulty of urination is greater, and urgency of call more imperious than can be accounted for by the size of the prostate, or amount or residual urine.

(2) It is difficult, often impossible, to introduce a metal sound into the bladder through the warped urethra.

(3) Pain in the pelvis, often extending to the thighs and legs, continuous.

(4) Blood sometimes precedes or follows the stream of urine.

(5) Prostate enlarged, as hard as a stone, and the finger in the rectum can often detect induration of one or both vesiculæ seminales.

Soft cancer is not so easily diagnosed. Its presence is not usually suspected until it has progressed very far. At first the symptoms are rectal, the patient has frequent calls to empty the rectum, tenesmus, blood, and mucous in operations; afterwards and secondarily, frequency of micturition, incontinence, or retention. Rectal examination shows large, soft, elastic tumor, springing from the prostate, pushing backward into the rectum, eventually breaking into that organ, and filling the pelvis.

If the condition of the patient requires it, the bladder should be regularly emptied by a catheter in cases of complete or partial retention, the rectum should be unloaded by enemata, and the stools kept soft by laxatives by the mouth. Sedatives should be given to relieve pain. Opium and belladonna being the most valuable.

In some cases where the rectal symptoms are distressing, the formation of an artificial anus by colotomy may be done with advantage.

No radical operation for the permanent cure of cancer of the prostate has yet been devised. The prostate, and along with it the base of the bladder, have been removed for cancer, but the results have not been such as to encourage a repetition of the operation. Four cases are on record. Partial removal of the organ by means of perineal or suprapubic cystotomy would only end like partial removal of a cancerous mass in the breast or in any other gland,—that is, add to the trouble. Perineal drainage would not be tolerated, and should never be attempted. The incision and presence of a tube in the neck of the organ would add to the pain and irritability of the bladder, and rapidity of growth of the cancer.

Suprapubic cystotomy and drainage give physiological rest to the bladder, and immense relief in these cases. When the bladder has been opened by the simple suprapubic incision, the diseased prostate can be thoroughly examined by the finger introduced into the bladder. If, at the same time, the index-finger of the other hand is introduced into the rectum, a bimanual examination is made, and the extent and character of the malady exactly mapped out, or a small electric light introduced through the suprapubic opening permits of complete inspection of the vesical surface of the growth. The catheter used for drainage after the cystotomy should not be allowed to touch the prostate or lie in the bladder; it should have its opening on the vesical end of the instrument and not on the side, and should be placed only through the wall of the bladder. These rules apply to drainage for any cause after suprapubic cystotomy.

In one case under my care of suprapubic artificial urethra for hard cancer of the prostate, the patient wore for a year a silver plug to prevent the track from closing, and when the urine accumulated in the bladder, the plug was withdrawn, and a soft gum catheter introduced. When the water had all escaped, the catheter was taken out, and the plug replaced. In this way nearly all of the pain and frequency of urination was avoided. Pain in pelvis and legs, and other symptoms of cancer, continued until his death.

Fenwick, in discussing the subject, says that few surgeons will admit that the operation of complete removal of the cancer is worth a trial, and that partial extirpations are useless, and only aggravate the disease, and Whitney, in closing an admirable paper, in which he reports a case says, " Any operation to be of value must be early and radical; but when it is remembered that in 80 or 90 per cent. of cases confirmed by an autopsy other important organs or glands were involved, and that the diagnosis of this affection in its early stage is a matter of the greatest difficulty, the ultimate success of any operation is a matter of grave doubt."